(12) UK Patent Application (19) GB (11) 2 088 832 A

(21) Application No 8131929
(22) Date of filing 22 Oct 1981
(30) Priority data
(31) 55/153442
(32) 31 Oct 1980
(33) Japan (JP)
(43) Application published
16 Jun 1982
(51) INT CL³
B65H 43/00
(52) Domestic classification
B8R 563 564 571 572
584 586 TC
(56) Documents cited
GB 2056415A
GB 1571229
(58) Field of search
B6C
B8R
(71) Applicants
Laurel Bank Machine
Company Limited,
No. 1—2, 1-chome,
Toranomon, Minato-ku,
Tokyo, Japan
(72) Inventors
Kiyoshi Fujii,
Teruhisa Chiba
(74) Agents
Forrester, Ketley & Co.,
Forrester House, 52
Bounds Green Road,
London N11 2EY

(54) **Bank note receiving apparatus**

(57) A bank note receiving apparatus for use in a change machine or an automatic deposit machine includes a bank note discriminating device (6) for checking whether or not a bank note is correct. The discriminating device signals which indicate why a bank note is incorrect are stored in a memory of a controller (7). In accordance with an instruction from an instruction input device (8), the signals are delivered from the memory of the controller to a printing device (9) which prints out the reasons why a bank note is incorrect, e.g. at the time the banknote is rejected or during a maintenance operation carried out on the machine. The printer may print out the number of times the same type of discrimination signal has caused rejection of banknotes.

FIG. 2

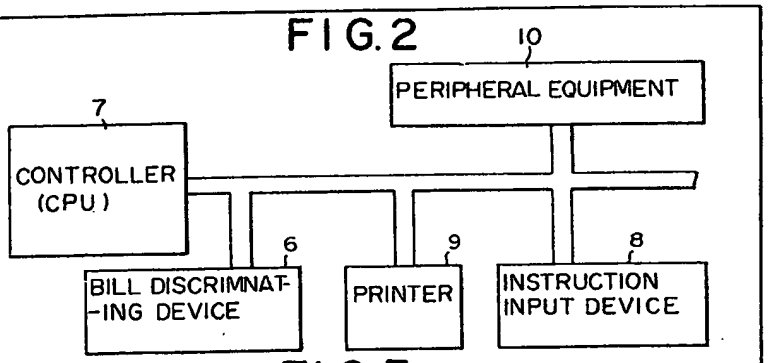
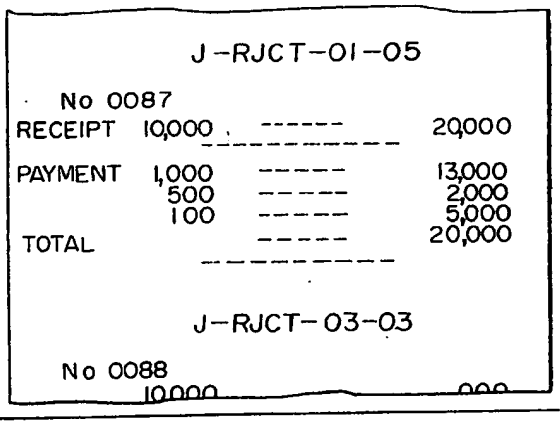


FIG. 3



GB 2 088 832 A

FIG. 1

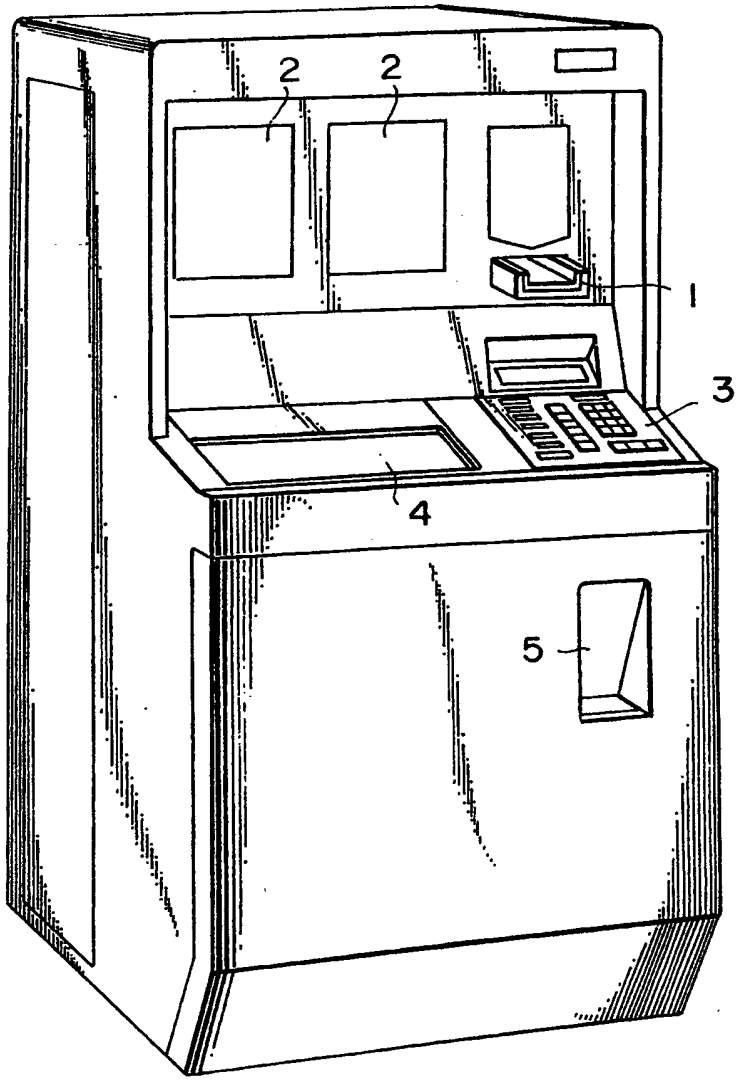


FIG. 2

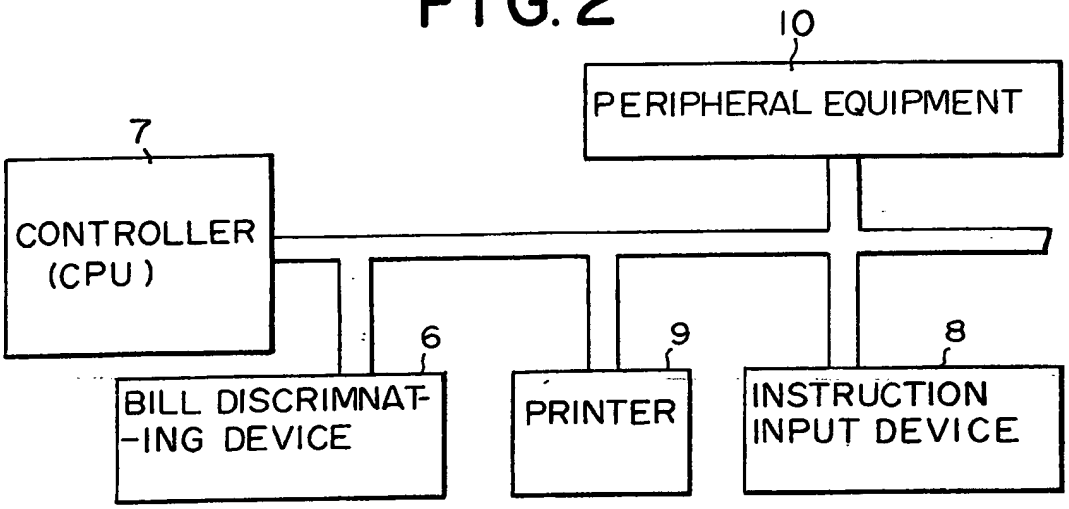
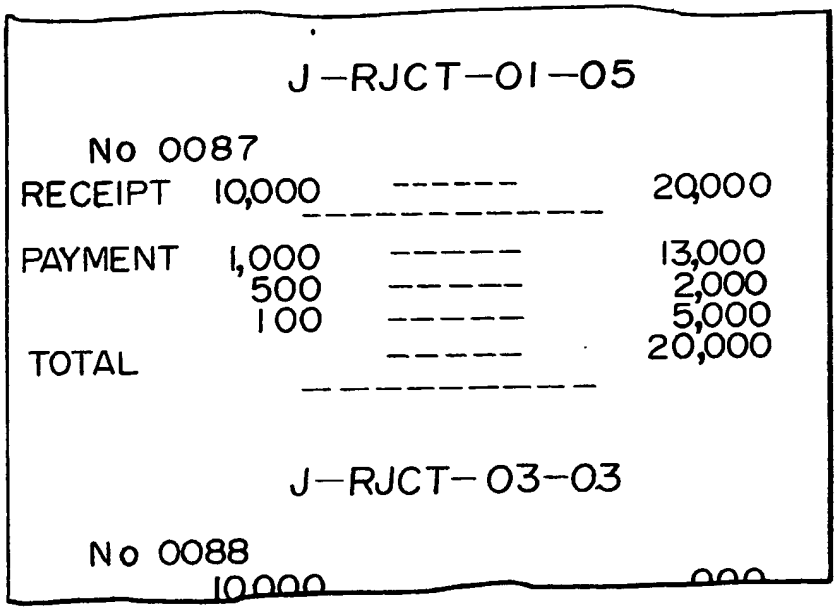

10
PERIPHERAL EQUIPMENT
7
CONTROLLER
(CPU)
6
BILL DISCRIMNAT-
-ING DEVICE
9
PRINTER
8
INSTRUCTION
INPUT DEVICE

FIG. 3


J-RJCT-01-05
No 0087
RECEIPT 10,000 ------ 20,000
PAYMENT 1,000 ------ 13,000
500 ------ 2,000
100 ------ 5,000
TOTAL ------ 20,000
J-RJCT-03-03
No 0088
10,000 000

SPECIFICATION

Bank note receiving apparatus

This invention relates to bank note receiving apparatus for use in a change machine, automatic deposit machine or the like.

Bank note receiving apparatus must accept only correct bank notes and reject incorrect bank notes. To do this, the apparatus is provided with a bank note discriminating device which checks the type of bank note and the correctness of the bank note in various ways. For instance, a conventional bank note receiving apparatus has a discriminating device which can check the photo pattern of a bank note using a photosensor, check if two bank notes have been supplied simultaneously, check the length of the bank notes, and check if the bank notes are being supplied continuously. It is also possible to check a magnetic pattern of a bank note with a magnetic sensor. These checks are performed by a discriminating device, the performance of which is determined by an electric adjustment (level adjustment) of an electric circuit of the device.

Conventional change machines, deposit machines and so forth, however, have the following disadvantage. Namely, even if these machines are delivered and situated after being optimally adjusted, the performance of the discriminating device changes gradually due to changes with time of the elements used in the device, collection of dust, temperature changes, or wear of the belt which transfers the bank notes.

In the conventional apparatus, correct bank notes which are judged as being unacceptable as a result of changes in the performance of the discriminating device have been rejected as well as incorrect bank notes. Therefore, when the administrator of the change machine or the deposit machine becomes aware of an increase in the rejection rate, it is necessary to investigate the reasons for the increase. To do this, a maintenance person must acutally insert a number of bank notes into the machine to find out what kind of bank notes are being rejected by which checking function, and then, for example, readjust the levels, which is troublesome work. Thus, the maintenance person must spend a considerable amount of time investigating the reasons for the increase in the rejection rate. Another problem is that the bank notes inserted by the maintenance person are not always rejected for the same reasons as those rejected during ordinary use of the machine. Furthermore, the bank notes carried by the maintenance person are often in a better condition than the bank notes carried by the ordinary users of the machines, so that the rate of rejection during inspection is usually much lower than that during ordinary use, making it difficult to ascertain exactly the reasons for rejection.

According to the invention, there is provided bank note receiving apparatus, comprising: bank note discriminating means for checking whether or not a bank note is correct; controlling means for receiving signals from the bank note discriminating means indicating the reasons why a bank note is incorrect and having a memory for recording the signals; instruction input means for giving an instruction concerning the reasons why a bank note is incorrect to the controlling means; and printing means for printing out the reasons why a bank note is incorrect upon receipt of an instruction from the controlling means.

In order that the invention may be more readily understood, an embodiment thereof will now be described, by way of example, with reference to the accompanying drawings, in which:

FIGURE 1 is a perspective view of a change machine incorporating bank note receiving apparatus embodying the invention;

FIGURE 2 is a block diagram of a control circuit for handling the bank notes; and

FIGURE 3 illustrates a printout from the bank note receiving apparatus showing the reasons for rejections.

Referring now to the drawings, Figure 1 shows a change machine incorporating bank note receiving apparatus embodying the invention.

Bank notes are inserted into the machine through a bank note receiving opening 1. Instruction panels 2 with money exchange instructions and other remarks for the user are provided, together with an operating panel 3 for inputting and displaying the amount of money to be exchanged and so forth. Pay-off openings 4 and 5 are also provided, through which the changed bank notes and coins are discharged. In operation, as in the case of a conventional machine, a bank note inserted into the bank note receiving opening 1 is checked by a bank note discriminating device 6 (Figure 2) to ensure that the bank note is correct and is of the correct type and any incorrect bank note is rejected and returned through the bank note receiving opening 1.

Figure 2 shows a control circuit for treating a rejected bank note. The discriminating device 6 delivers to a controller 7 various codes representing the kinds of check functions performed such as an abnormal running (01), abnormal bank note length (02), double feed of bank notes (03), abnormal photopattern (04), abnormal magnetic pattern (05), continuous feed of bank notes (06) and so forth, together with a signal representing the type of bank note such as a 10,000 yen bank note (01), a 5,000 yen bank note (02), a 1,000 yen bank note (03), a 500 yen bank note (04) and so forth, if the type of bank note is discriminated. The controller 7 is a device such as a central processing unit capable of performing the ordinary exchanging functions and having a memory for memorizing various data. The controller 7 can, according to an instruction previously given by an instruction input device 8, either print the reason for rejection of a bank note automatically at the time of the rejection (automatic printing mode), or print the reasons for rejection optionally at any time when requested (optional printing mode), for example, during maintenance of the machine. If the selected mode

is, for example, the automatic printing mode, a printer 9 is actuated at the time of each rejection to produce a printout similar to that shown in Figure 3. Reference numeral 10 generally designates peripheral equipment which includes, for example, bank note and coin pay-off devices in the case of the money changing machine.

In the case where the reason for rejection is to be printed at the time of each rejection (automatic printing mode), the instruction input device 8 is switched to the automatic printing mode, while, when it is desired to print out the types of rejected bank notes and the reasons for rejection which have occurred up to a time the machine is examined for maintenance, the instruction input device 8 is switched to the optional printing mode. In the latter case, printing is started by pressing a print button provided in the instruction input device 8, at any time as required for examination of the machine. The printer 9 is disposed at a place different from the operation section 3, such as at the rear panel of the machine which is not visible to the ordinary user of the machine.

Figure 3 shows an example of the printout of data obtained in the automatic printing mode. The data reads "J-RJCT-01-05". The code "J-RJCT" is a code representing rejection of the bank note by the bank note discrimination device 6. The coil "01" indicates that the rejection bank note is for example a 10,000 yen bill and the code "05" indicates that the reason for rejection is an abnormality in the magnetic pattern of the bank note. The method of the printing can be determined as desired.

The automatic printing mode offers the advantage that the reasons for rejection can be seen with respect to time, that is, the number of money changing operations. For this reason, it is preferable to record the time of rejection together with the reason for rejection.

Other portions of the printed data are data peculiar to the change machine, such as the types and sums of bank notes received, and kinds and sums of the bank notes and coins paid out.

By providing a memory for recording the number of rejections for each checking function, i.e. for each reason for rejection, and for each type of bank note including unidentified bank notes, it is possible to print the contents of these memories according to an instruction from the instruction input device 8, which can be effected as desired by pressing the printing button when in the optional printing mode. In such a case, the number of rejection cycles is added to the end of the above mentioned data. Namely, the printed code is, for example, "J-RJCT-01-01-(number)", "J-RJCT-01-02-(number)" or the like. Such printed data allows the frequency of rejection of each type of bank note for each reason for rejection to be quickly ascertained, while eliminating the trouble of providing a printout for each rejection and wasting recording paper.

As described, bank note receiving apparatus embodying the invention records the reason for rejection of a bank note and either prints out the details at the time of each rejection or, alternatively, stores the number of rejections recorded for each type of bank note and each reason so that they may be printed out at any desired time by a printing instruction.

Therefore it is possible easily and promptly to recognize the reasons for rejection by simply reading the data printed on the recording paper, and to take the necessary measures such as a readjusting the sensitivity levels of the discriminating device in the light of the recorded data. Consequently, the maintenance time is considerably shortened and the rate of operation of the bank note receiving apparatus is advantageously very much increased.

CLAIMS

1. Bank note receiving apparatus, comprising: bank note discriminating means for checking whether or not a bank note is correct; controlling means for receiving signals from the bank note discriminating means indicating the reasons why a bank note is incorrect and having a memory for recording the signals; instruction input means for giving an instruction concerning the reasons why a bank note is incorrect to the controlling means; and printing means for printing out the reasons why a bank note is incorrect upon receipt of an instruction from the controlling means.

2. Bank note receiving apparatus according to claim 1, wherein the bank note discriminating means is capable of checking for abnormal running, abnormal bank note length, double feeding of bank notes, abnormal photopatterns, abnormal magnetic patterns, and continuous feeding bank notes.

3. Bank note receiving apparatus according to claim 1 or 2, wherein the printing means also prints out the type of a bank note which is incorrect.

4. Bank note receiving apparatus according to claim 1, 2 or 3, wherein the printing means is arranged to printout the number of times the same reason for rejection of each type of bank note has occurred.

5. Bank note receiving apparatus according to claim 1, 2, 3 or 4, wherein the printing means has an automatic printing mode in which a printout is produced each time a bank note is determined to be incorrect and an optional printing mode in which a printout is produced only when requested.

6. Bank note receiving apparatus substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

7. Any novel feature or combination of features described herein.

Printed for Her Majesty's Stationery Office by the Courier Press, Leamington Spa, 1982. Published by the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.

D4a

⑲ 日本国特許庁 (JP)　⑪ 特許出願公開

⑫ 公開特許公報 (A)　昭56—136689

⑤Int. Cl.³	識別記号	庁内整理番号	⑬公開 昭和56年(1981)10月26日
B 07 C 3/08		6528—3F	
// B 65 H 39/115		6827—3F	

発明の数 1
審査請求 未請求

(全 3 頁)

⑭紙葉類分類装置

⑰発 明 者 高橋省造
川崎市幸区柳町70番地東京芝浦電気株式会社柳町工場内

⑳特 願 昭55—39907
㉒出 願 昭55(1980)3月28日

㉑出 願 人 東京芝浦電気株式会社
川崎市幸区堀川町72番地
㉓代 理 人 弁理士 鈴江武彦 外2名

明 細 書

1.発明の名称

紙葉類分類装置

2.特許請求の範囲

(1) 2種類以上が混在する状態で供給された供給箱内の紙葉類を順次1枚ずつ取出して検知装置で判別し、この判別結果にもとづいて当該部の指定の区分箱に区分整理するようにしたものにおいて、上記検知装置で種類の判別ができなかつた場合、紙葉類を搬送部の停止により一旦停止させ、目視によりこの紙葉類の種類を判定して指定スイッチを押すことにより強制的に指定の区分箱に収納、計数させるようにしたことを特徴とする紙葉類分類装置。

(2) 検知装置は複数の検知部からなり、少くとも1つの検知部が判定不能であつた場合、検知装置を判別不能とするとともに強制的に収納、計数するための指定のスイッチからの入力信号と判定不能であつた検知部からの信号とが一致したとき紙葉類を取込搬送するようにしたことを特徴とする特許請求の範囲第1項記載の紙葉類分類装置。

3.発明の詳細な説明

本発明は、たとえば2券種以上の紙幣等の紙葉類を自動的に分類する紙葉類分類装置に関する。

通常、この種装置においては、表面が汚れていたり、破損したりしていて判別装置で判別できなかつた紙葉類は当該箱には収納されずに通過し、排除箱に排出されるようになつている。

しかしながら、従来においては、この排出された紙葉類は装置のもつ検知装置では判定不能のため、分類、計数、収納することができないといつた問題があつた。

そこで、近時、供給箱に装填された未分類の紙葉類を全部処理し終えた段階で、排除箱に排出された紙葉類を1枚ずつ目視によつて種類を判別し、判別した紙葉類を1枚ずつ供給箱にセットし、その紙葉類の種類に対応する指定スイッ

を押し、この紙幣Sを強制的に指定の区分箱に収め、計数させるようにしたものが開発された。

しかし、このものは排出された紙幣部については再度係員が1枚ずつ収納して処理しなければならず、操作上わずらわしいといった欠点がある。

本発明は、上記事情にもとづきなされたもので、その目的とするところは、識別不能とされた紙幣Sを排除することなく強制的かつ確実に計数、分類し得るようにした紙葉類分類装置を提供しようとするものである。

以下、本発明を図示の一実施例を参照して説明する。図中1は表示操作部であり、この表示操作部1の手前側下方には供給部2が設けられている。この供給部2には五百円、千円、5千円、一万円の4種類の紙幣3…が混在した状態で収容されている。この供給部2内に立位状態かつ四方向に整合された紙幣群3…は繰出ローラ4の回転に伴って最前端の紙幣3が順次繰出され第1、第2の搬送ベルト5、6および第3、第4の搬送ベルト7、8の相互対向面部で挟持された状態で1枚宛の第1の搬送路9に取り込まれ鑑別部10に搬送されるようになっている。

また、上記鑑別部10は5百円、千円、5千円、一万円の4種類の紙幣3…を区分整理するための4個の区分箱11a、11b、11c、11dを有した構成となっている。これら区分箱11a、11b、11c、11dの上端受入口部は前記第4の搬送ベルト8とこの第4の搬送ベルト8の下方側に適当間隔で配設されたローラ12…によって形成され上記第1の搬送路9と連続する水平な第2の搬送路13の下面側に対向している。

さらに、第1の搬送路9の途中には搬送される紙幣3の種類の判別と計数を行う検知装置14が配設されているとともに第2の搬送路13の中途部には各箱箱11a、11b、11cに対向してダイバータ15a、15b、15cが配設されている。

上記検知装置14は厚さ検知部16、色識別部17、磁気検知部18からなっており、これら検知部16、17、18の少くとも1つが判定不能であった場合、検知装置14を識別不能とし、繰出ローラ4および搬送路9の繰出しおよび搬送動作を一旦停止するようになっている。

また、前記表示操作部1にはオペレータのコード番号等を入力するためのテンキー部19、スタートスイッチ20、ジャム処理などで一旦装置を停止した場合の再スタート時に使用する再スタートスイッチ21、集計結果等を表示する表示部22、集計結果を記憶した伝票が発行される伝票発行口23および検知装置14で識別不能とされた紙幣3を強制的に所定の各箱箱11a～11dに収納、計数させるための強制スイッチ（各種スイッチ）24a、24b、24c、24dが配置されている。

つぎに、上記実施例の動作を説明する。繰出ローラ4の回転に伴って供給部2から繰出された紙幣3…は第1の搬送路9によって取込まれ、この搬送途中において検知装置14で種類の判別と計数が行われたのち、第2の搬送路13に送り込まれる。そして、上記検知装置14での検知結果によってそれぞれの種類に相当する指定の箱箱11a、11b、11c、11dに区分整理される。すなわち、たとえば検知部13で検知された紙幣3が鑑別部10の右から3番目の箱箱11cに整理されるべき5千円の紙幣3であったときには、検知装置14により判別された情報によって紙幣3が3番目の箱箱11cに近づいたときにタイミングをとって箱箱11cに対向して配置されたダイバータ15cが実線状態に回動位置し、上記紙幣3を箱箱11c内に収容するようになっている。

一方、券面が汚れていたり、破損したりして検知装置14で判別できなかった紙幣3が検知装置14を通過すると第1の搬送路9および繰出ローラ4は同時に停止し、判別不能の紙幣3は検知装置14の出口付近で停止される。

この位置において検知不能の紙幣3を目視で券種を判別し表示装置部1の紙幣3の券種に相当する指定スイッチすなわち、5千円券であると判別した場合には5千と表示されている指定スイッチ24cを押す。

検知装置14の検知部16，17，18において紙幣3の長さ、色具合、模様を検知し、それぞれの検知部16，17，18の判定の情報が合致した時にその紙幣3が4券種中のある1券種と判断される。しかし、この3つの検知部16，17，18のどれか1つたとえば長さ検知部161つでも判定不能であつた場合に、前述した判別不能という扱いをする。

この点で上記のように目視によつて、指定スイッチ24cが押されるが、判定不能であつた長さ検知部16以外の判定可能の検知部17，18からの情報と押された指定スイッチ24cとの情報とが一致した場合のみ一旦停止させた紙幣3を搬送させ、該当する集積部11cに収納し計数する。

図面は本発明の一実施例を示す概略的構成図である。

2…供給部、3…紙葉類（紙幣）、9…第1の搬送路、10…集積部、11a～11d…区分機、14…検知装置、16…長さ検知部、17…色別検知部、18…模様検知部、24a～24d…指定スイッチ。

出願人代理人　弁理士　吉　江　武　彦

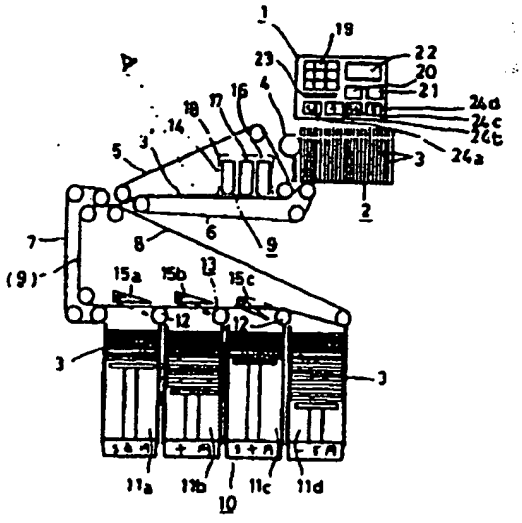
判定可能であつた検知部17，18の情報と押された指定スイッチとの情報とが異なる場合には押し間違いとみなし、搬送させない。

また、万が一、3つの検知部16，17，18が共に判定不能であつた場合、あるいは3つの検知部16，17，18でそれぞれ異なつた判定をした場合には検知装置14の情報を利用できないため、この場合には目視判定後の指定スイッチを2回押し、押し間違いでないことを入力して搬送させることとする。

以上説明したように本発明によれば、判定不能な紙幣を排除することなく種別的一つ宛に計数、分別でき1枚ずつ再度吸着部から吸着するというわずらわしさがなくなるし排除するための搬送路や排除部が不要になり、機構の簡素化が図れる。

また、判定可能であつた検知部の情報と指定スイッチとの情報の一致をみるので分類、計数の間違いがなくなるといつた効果を有する。

4.図面の簡単な説明



この位置において検知不能の紙幣3を目視で券種を判別し表示操作部1の紙幣3の券種に該当する指定スイッチすなわち、5千円券であると判別した場合には5千と表示されている指定スイッチ24cを押す。

検知装置14の検知部16，17，18において紙幣3の長さ、色具合、磁気を検知し、それぞれの検知部16，17，18の判定の情報が合致した時にその紙幣3が4券種中のある1券種と判断される。しかし、この3つの検知部16，17，18のどれか1つたとえば長さ検知部16 1つでも判定不能であつた場合に、前述した判別不能という扱いをする。

この時点で上記のように目視によつて、指定スイッチ24cが押されるが、判定不能であつた長さ検知部16以外の判定可能の検知部17，18からの情報と押された指定スイッチ24cとの情報とが一致した場合のみ一旦停止させた紙幣3を搬送させ、該当する集積部11cに収納し計数する。

判定可能であつた検知部17，18の情報と押された指定スイッチとの情報とが異なる場合には押し間違いとみなし、搬送させない。

また、万が一、3つの検知部16，17，18が共に判定不能であつた場合、あるいは3つの検知部16，17，18でそれぞれ異なつた判定をした場合には検知装置14の情報を利用できないため、この場合には目視判定後の指定スイッチを2回押し、押し間違いでないことを入力して搬送させることとする。

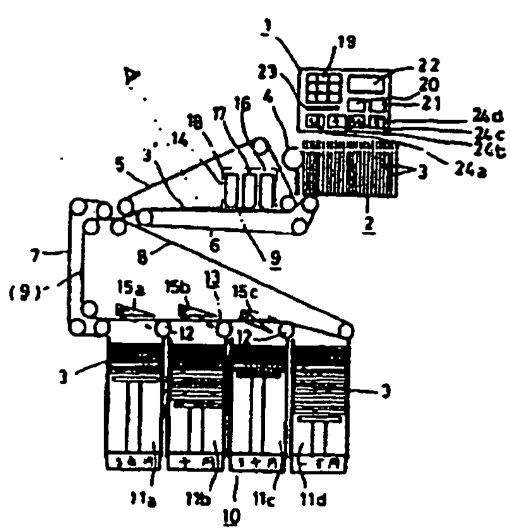
以上説明したように本発明によれば、判定不能な紙幣類を排除することなく強制的かつ確実に計数、分類でき1枚ずつ再度供給部から供給するというわずらわしさがなくなるし排除するための搬出路や排除部が不要になり、機械の簡素化が図れる。

また、判定可能であつた検知部の情報と指定スイッチとの情報の一致をみるので分類、計数の間違いがなくなるといつた効果を奏する。

4. 図面の簡単な説明

図面は本発明の一実施例を示す概略的構成図である。

2…供給部、3…紙幣類（紙幣）、9…第1の搬送路、10…集積部、11a～11d…区分部、14…検知装置、16…長さ検知部、17…色別検知部、18…磁気検知部、24a～24d…指定スイッチ。



出願人代理人 弁理士 鈴江武彦

D4b

#4. Japanese Appln. 56-136689 translation

Unexamined Published Japanese Patent Application No. 56 - 136689

Unexamined Publication Date: October 26, 1981

Application No. 55 - 39907

Application Date: March 28, 1980

Request for Examination: Not Made

Inventor: Shozo Takahashi

Applicant: Tokyo Shibaura Denki Kabushiki Gaisha

Title of the Invention:

Paper Sorting Apparatus

S P E C I F I C A T I O N

1. Title of the Invention

Paper Sorting Apparatus

2. Scope of the Claim

(1) A paper sorting apparatus in which notes of paper, as fed in a mixed state of two or more kinds to a feed unit, are let off sequentially one by one and are discriminated by a detection unit so that they are sorted and stacked on the basis of the discrimination result on a designated compartment of a stack unit, characterized in that when the kind cannot be discriminated by said detection unit, the paper notes are once stopped by interrupting a conveyor unit and are visually discriminated on their kind so that they are forcibly accommodated in the designated compartment and counted by pushing a designation switch.

(2) A paper sorting apparatus as set forth in Claim 1, characterized in that the detection unit includes a plurality of detectors so that when at least one detector is indecisive, the detection unit is made indecisive and so that the paper notes are let in and conveyed when a coincidence is made between the input data coming from the designation switch for the forced accommodation and the counting and the data coming from the decisive detector.

J. Detailed Description of the Invention

The present invention relates to a paper sorting apparatus for sorting automatically notes of paper such as notes of paper currency of two or more denominations.

In the apparatus of this kind, it is customary that the paper notes, which could not be discriminated because of their soiled surfaces or breakages, are not stacked on a stack unit but are caused to pass therethrough and accumulated in an exit.

In the prior art, however, the paper notes thus removed cannot be discriminated by the detection unit of the apparatus to raise a problem that they cannot be sorted, counted and accumulated.

In recent years, there has been made a development in which at the stage when all the unsorted paper notes accumulated in the feed unit are processed out, the notes discharged to the exit are visually discriminated one by one on their kinds, in which the discriminated paper notes are placed one by one on the feed unit, and in which a designation switch corresponding to the kind of the paper notes is pushed so that they may be forcibly accommodated in the designated compartment and counted.

In this development, however, the paper notes removed have to be fed again one by one to and processed by the feed unit, thus raising a defect that the operations are troublesome.

The invention has been conceived in view of the background thus far described and has an object to provide a paper sorting apparatus capable of counting and sorting the notes of paper, which have been indiscriminative, forcibly and reliably without being removed.

The invention will be described in connection with its one embodiment with reference to the accompanying drawings. Reference numeral 1 appearing in the drawing designates a display control unit, and a feed unit 2 is disposed at this side and under the display control unit 1. In this feed unit 2, there are accumulated in a mixed state notes of paper currency 3 - - - of four denominations of ₩500, ₩1,000, ₩5,000 and ₩10,000. The paper currency notes 3 - - -, as layered in their facial directions and in standing positions within the feed unit 2, are sequentially let off from their foremost end as a let-off rotor 4 turns, and are fed to a transversely I-shaped first passage 9, which is formed of the opposed faces of first and second conveyor belts 5 and 6 and third and fourth conveyor belts 7 and 8, until they are conveyed to a stack unit 10.

This stack unit 10 is constructed to have four compartments 11a, 11b, 11c and 11d for sorting and stacking the notes 3 - - - of the four denominations of ₩500, ₩1,000, ₩5,000 and ₩10,000. The upper end entrances of these compartments 11a, 11b, 11c and 11d confront the lower face side of a horizontal second passage 13 which is formed by the fourth conveyor belt

8 and rollers 12 - - - arranged at a suitable interval on the lower face side of the fourth conveyor belt 8 and which has communication with the first passage 9.

On the starting end side of the first passage 9, on the other hand, there is arranged a detection unit 14 for discriminating the denominations and counting the paper currency notes 3 conveyed. Midway of the second passage 13, moreover, there are arranged diverters 15a, 15b and 15c which are opposed to the compartments 11a, 11b and 11c.

The detection unit 14 is composed of a length detector 16, a color detector 17 and a magnetic detector 18. If at least one of these detectors 16, 17 and 18 cannot discriminate, the detection unit 14 is inactivated to interrupt the letting-off and conveying actions of the let-off rotor 4 and the passage 9.

On the display control unit 1, on the other hand, here are arranged: a ten-key set 19 for inputting the code number or the like of an operator; a start switch 20; a restart switch 21 to be used for restarting the apparatus which has been once stopped for treating a jamming or the like; an indicator 22 for indicating a totaled result; a slip issuing slit 23 for issuing a slip which is recorded with the totaled result; and designation switches (or denomination switches) 24a, 24b, 24c and 24d for accumulating the paper currency notes 3, which could not be determined by the detection unit 14, forcibly in the

predetermined compartments 11a to 11d and for counting the notes 3.

Here will be described the actions of the embodiment. The paper currency notes 3 - - -, as sequentially let off the feed unit 2 as the let-off rotor 4 rotates, are let in by and conveyed through the first passage 9. Midway of this conveyance, the notes 3 - - - are discriminated on their denominations and counted by the detection unit 14 until they are fed to the second passage 13. Depending upon the detection results of the detection unit 14, moreover, the notes 3 - - - are sorted and stacked in the designated compartments 11a, 11b, 11c and 11d corresponding to the individual denominations. Let the case be considered in which the paper currency notes 3, as detected by the detection unit 14, are the notes 3 of ₩5,000 to be stacked in the third compartment 11c, as located from the lefthand side, of the stack unit 10. When the notes 3 approach the third compartment 11c, the diverter 15c, as arranged to confront the compartment 11c, is timed by the discrimination information of the detection unit 14 to turn to the state, as shown by the solid line, so that the notes 3 are stacked in the compartment 11c.

When a note 3', which could not be discriminated by the detection unit 14 because of a soiled surface or breakage, passes through the detection unit 14, on the other hand, the first passage 9 and the let-off rotor 4 instantly stop so that the indiscriminative note 3' is stopped near the exit of the

detection unit 14.

At this position, the denomination of the indiscriminative note 3 is visually discriminated, and the designation switch corresponding to the denomination of the note 3' of the display control unit 1, that is, the designation switch 24c indicating ₩5,000 when this denomination is discriminated is pushed.

The note 3 is detected on its length, color and magnetism by the detectors 16, 17 and 18 of the detection unit 14. When the data of discrimination of the individual detectors 16, 17 and 18 agree, the note 3 is decided to belong one of the four denominations. If one of these three detectors 16, 17 and 18, e.g., the length detector 161 cannot discriminate, however, the note 3 is handled to be indiscriminative, as described above.

At this time, the designation switch 24c is visually pushed. Only when there is a coincidence between the data coming from the decisive detectors 17 and 18 other than the indecisive length detector 16 and the data coming from the pushed designation switch 24c, the note 3' once stopped is conveyed and is accommodated and counted in the corresponding stacker 11c.

When the data of the decisive detectors 17 and 18 and the data of the pushed designation switch are different, this operation is deemed as mistaken, and the conveyance is made.

If all the three detectors 16, 17 and 18 are indecisive or if the three detectors 16, 17 and 18 made different decisions,

the data of the detection unit 14 cannot be utilized. In this case, therefore, the designation switch after the visual discrimination is pushed twice to input the fact that the push is not mistaken, thereby to effect the conveyance.

According to the invention, as has been described hereinbefore, the indiscriminative paper notes can be forcibly and reliably counted and sorted without being removed, thereby to eliminate the trouble of feeding the notes again one by one from the feed unit. Nor is required a passage or a remover for removing the notes so that the construction can be simplified.

Moreover, a coincidence between the data of the decisive detectors and the data of the designation switches is taken to provide an effect the sorting and counting actions are not mistaken.

4. Brief Description of the Drawings

The drawing is a schematic construction diagram showing one embodiment of the invention.

2 - - - Feed Unit; 3 - - - Notes of Paper (or Paper Currency); 9 - - - First Passage; 10 - - - Stack Unit; 11a to 11d - - - Compartments; 14 - - - Detection Unit; 16 - - - Length Detector; 17 - - - Color Detector; 18 - - - Magnetic Detector; and 24a to 24d - - - Designation Switches.

Agent: Takehiko Suzue, Patent Attorney